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BOOK REVIEWS

Neolithic Dew-ponds and Cattle-ways. By ARTHUR JOHN HUBBARD, M.D., and GEORGE HUBBARD, F.S.A. *With illustrations.* London: Longmans, Green & Co., 1905. 8°, vii + 69 pp.

General Pitt-Rivers, Mr E. H. Willett, Canon Greenwell, and others have made us acquainted with the numerous earthworks on the Sussex Downs. The most notable of these works is that of Cissbury, some three or four miles north of Worthing. The Cissbury Ring, roughly oval in shape, enclosing an area of 60 acres, was thought by the early writers to be of Roman origin, but Col. A. H. Lane Fox (General Pitt-Rivers) proved it to be the work of the neolithic inhabitants of Britain.

The Cissbury embankments, pierced at intervals by openings, suggest the earthworks of our own mound-builders. The inner embankment is the larger, and rises 40 feet above the ditch that separates it from the outer.

These hill fortifications generally cover the most elevated points of the Downs, those at Chanctonbury, a short distance north of Cissbury, being 800 feet above sea-level. The magnitude of the works implies a considerable population and a settlement covering a time period of no mean length. The question, therefore, of water supply for such high elevations is one of moment. The Messrs Hubbard, in an attractive little volume, have attempted to solve this problem.

Some distance below the Cissbury Ring, and on opposite sides of the summit, are two artificial depressions—one at present dry, the other (on the north) filled with water. The authors call them “dew-ponds.” The mode of construction and thermodynamics of a dew-pond are best described in the authors’ own words :

“There is still in this country at least one wandering gang of men (analogous to the mediæval bands of bell-founders, masons, etc.) who will construct for the modern farmer a pond which, in any situation in a sufficiently dry soil, will always contain water, more in the heat of summer than during the winter rains. This water is not derived from springs or rainfall, and is speedily lost if even the smallest rivulet is allowed to flow into the pond. The gang of dew-pond makers commence operations by hollowing out the earth for a space far in excess of the apparent requirements of the proposed pond. They then quickly cover the whole of the hollow with a coating of dry straw. The straw in its turn is covered by a layer of well-chosen, finely-puddled clay, and the upper surface

of the clay is then closely strewn with stones. Care has to be taken that the margin of the straw is effectively protected by clay. The pond will gradually become filled with water, the more rapidly the larger it is, even though no rain may fall.

"If such a structure is situated on the summit of a Down, during the warmth of a summer day the earth will have stored a considerable amount of heat, while the pond, protected from this heat by the non-conductivity of the straw, is at the same time chilled by the process of evaporation from the puddled clay. The consequence is that during the night the moisture of the comparatively warm air is condensed on the surface of the cold clay. As the condensation during the night is in excess of the evaporation during the day, the pond becomes, night by night, gradually filled.

"The dew-pond will cease to attract the dew if the layer of straw should get wet, as it then becomes of the same temperature as the surrounding earth, and ceases to act as a non-conductor of heat. This practically always occurs if a spring is allowed to flow into the pond, or if the layer of clay is pierced."

The dried up dew-pond already mentioned bears a definite relation to the neolithic settlement at Cissbury. The origin of both, therefore, may be presumed to date from the same epoch, a presumption confirmed by the fact that the dew-pond in question "appears to be thoroughly fortified by a surrounding ditch and earthen wall, precisely similar to, though on a lesser scale than the great prehistoric earthworks on the top of the Downs."

Two roadways, roughly parallel and in places deeply cut, lead from the eastern entrance down to the dew-pond on the north. These are called "cattle-ways," and form another link in the chain of evidence tending to prove that the earthworks and dew-ponds are contemporary. Another bit of evidence is that remains of a "dwelling" similar to those within the Ring are sometimes found adjacent to a dew-pond. These so-called dwelling sites marked by gentle depressions in the surface of the ground are, however, primarily the sites of ancient pits sunk in neolithic times to depths of from 15 to 30 feet through the chalk in search of seams of flint suitable for the manufacture of implements. As soon as flint of the desired quality was reached, side chambers and horizontal connecting galleries were opened for the further exploitation of the flint nodules. Similar works are found at Grime's Graves near Brandon, Suffolk, and at Spiennes, Belgium. Pits, chambers, and galleries have long since been filled by débris of one sort and another, and possibly may have been utilized from time to time as habitations.

There is a dew-pond still full of water near Chanctonbury Ring. It is surrounded by protecting earthworks within which are the remains of a so-called "dwelling" or "watch-house." The latter is evidently the site of a shaft sunk for the purpose of exploiting flint from the Chalk.

Part II of the book treats of Maumbury Rings and Maiden Castle, both near Dorchester. The Maumbury earthwork "appears to us to differ entirely in purpose from the ordinary neolithic hill settlements with which it is certainly contemporary." Its orientation was carefully determined and found to coincide accurately with that of Stonehenge. It is in all probability a prototype of the great stone structure erected on Salisbury Plain and suggests the practice of sun worship in the neolithic period.

There are no dew-ponds at Maumbury Rings, but there is one within the ramparts at Maiden Castle. The area enclosed by the Rings at Maiden Castle is from 40 to 50 acres in extent. The enclosure is protected by a series of great embankments, even now 50 to 60 feet high; and the "maze of stupendous earthworks by which the entrance is guarded baffles description."

Part III deals with "cattle-tracks," a term employed to indicate the routes selected by the herds in contradistinction to the term "cattle-ways," used in the sense of roads built by man for the use of his cattle.

Two of the most important systems of cattle-tracks are at Ogbury Camp near Stonehenge and at Figsbury Ring between Salisbury and Stockbridge. At Ogbury Camp the cattle-tracks are connected with dew-ponds, as was the case at Cissbury and Chanctonbury.

Much emphasis is placed on the value of domestic herds to these neolithic settlers and the necessity of protecting their flocks as well as themselves from wild beasts and other enemies. The illustrations are all half-tones from excellent photographs and serve their purpose admirably. To have supplemented them with a few ground-plans and sections would have been of material assistance to the general reader in obtaining a proper conception of the extent and meaning of the neolithic hill settlements and their relations to the so-called dew-ponds and cattle-ways.

GEORGE GRANT MACCURDY.

Antropometria Militare. RIDOLFO LIVI. Two volumes, 4°, with atlas. Rome: Preso il Giornale Medico del Regio E Sercito, 1896, 1905.

The first volume of the valuable work by Dr Livi on military anthropometry in Italy, which appeared with an atlas in 1896, has just been followed with a second volume, devoted more particularly to data of a demographic and biologic character. Volume I deals with the stature, color of the eyes and hair, cephalic index, and the facial characters of Italian conscripts, chiefly from a racial point of view; while the second volume is devoted to the consideration of stature, weight, thoracic circumference, etc., more from the standpoint of physiology and hygiene.